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Notice of Allowability

Application No.

10/537,821

Examiner

Anastasia Midkiff

Applicant(s)

SOWERBY ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Request for Continued Examination filed 12 July 2007.
2. ☒ The allowed claim(s) is/are 1-23 and 25-32.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

ASM

ATTACHMENT TO NOTICE OF ALLOWABILITY

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 July 2007 has been entered.

Allowable Subject Matter

Claims 1-23 and 25-32 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to Claims 1 and 31, the prior art of record teaches many of the elements of the claimed invention, including radiographic equipment comprising: a first source which produces substantially mono-energetic fast neutrons by a deuterium-tritium or deuterium-deuterium fusion reaction, comprising a sealed-tube generator for producing the neutrons and having a deuteron energy of less than about 200 keV; a source of gamma rays of sufficient energy to substantially penetrate an object to be imaged, said gamma ray source being physically separated from the first neutron source; a shielding block comprised of source shielding surrounding neutron and gamma ray sources, apart from the provision of at least one opening for emitting substantially fan-shaped radiation beams; a first detector array to receive neutron

radiation emitted from the first neutron source and to convert the received neutron radiation into light pulses; said first detector aligned with the fan-shaped beams emitted from the source shielding block and shielded to substantially prevent radiation other than radiation directly transmitted from the sources reaching the array; a second detector array to receive gamma ray radiation from the source of gamma rays and to convert the received gamma radiation into light pulses; said first and second detectors being arrays of a number of scintillator pixels; conversion means for converting light pulses produced in the scintillators into electrical signals; conveying means for conveying the object between the sources and the detector array; computing means for determining from the electrical signals the attenuation of the neutrons and the gamma ray beams and to generate output representing the mass distribution and composition of the object interposed between the sources and detector array; and, display means for displaying images based on the mass distribution and the composition of the object being scanned.

However, prior art fails to teach or fairly suggest the apparatus wherein the first neutron source and the second x-ray or gamma ray source are physically separate and are also surrounded by a common collimation block that produces fan beams in the manner required by Claims 1 and 31.

Claims 2-23, 25-30, and 32 are allowed by virtue of their dependency upon Claims 1 and 31.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Documents to: Sowerby (US 4,314,155) regarding separate neutron and gamma ray sources used for inspecting objects with radiation, but without fan beams, collimation block(s), or imaging; Czirr (US 5,313,504) regarding separate neutron and gamma ray sources used for inspecting bore holes with radiation, but without fan beams, collimation block(s), conveyor, or imaging; Turcotte et al. (US 4,093,854) regarding neutron and gamma ray sources used for inspecting bore holes with radiation, but without physically separate sources, fan beams, collimation block(s), conveyor, or imaging; Gozani et al. (US 5,098,640) regarding separate neutron and gamma ray sources used for inspecting objects with radiation, but without a shared collimation block, or conveyor; Armistead (US 5,838,759) regarding neutron and x-ray sources used for inspecting objects with radiation, but without physically separate sources for neutrons and x-rays; and to Proctor (US 7,027,555 B2) regarding the use of neutron-produced gamma rays used for inspecting objects in general.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM
7/18/07



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER